

IV.—*Contributions to the Botany of South America.*

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[Continued from vol. iv. p. 363.]

SALPIGLOSSIS.

UPON a former occasion (*huj. op.* iii. p. 172) many reasons were adduced to show why the tribe of the *Salpiglossideæ*, as constituted by Mr. Bentham (DC. Prodr. x. 190), could not be maintained, and I proposed to limit that tribe simply to *Salpiglossis*, *Browallia*, *Leptoglossis*, and a new genus *Pteroglossis*, all being distinguished by their singularly dilated stigma and the peculiar mode of æstivation of the corolla. A careful examination of *Leptoglossis schwenckiioides* has since then offered reasons for placing that genus among the *Petunieæ*. The *Salpiglossideæ*, however, as thus limited, are evidently most intimately allied to the *Petunieæ*, agreeing with them in a somewhat similar form of stigma, the development of their stamens, their capsular fruit, and the very spiral form of the embryo in *Salpiglossis*, and differing from them only in their didynamous stamens and the æstivation of the corolla. The didynamous arrangement of the stamens does not appear to me to offer a sufficient reason for keeping them in an ordinal point of view apart from the *Petunieæ*, and for retaining them in the *Scrophulariaceæ*; indeed in the *Petunieæ* and *Nicotianeæ*, we find an evident tendency towards a didynamous structure, for one of the stamens is constantly shorter than the others, which are in two pairs, while the anther of the fifth is always somewhat smaller, and frequently almost sterile; and on the other hand, I have observed occasionally in *Salpiglossis* a fifth fertile stamen, showing a disposition to return to its normal condition; and I have also before me an instance of a flower with three pairs of stamens, varying in length, with a seventh shorter one, the anther of which, though smaller than the others, is fertile. The position of the *Salpiglossideæ* in the natural system appears to me therefore manifestly in the family which I propose to call *Atropaceæ*, or if considered only as a suborder, *Atropineæ*, according to the arrangement there shown (*loc. cit.* p. 165).

There is little in the genus *Salpiglossis* that calls for observation; one peculiar feature however claims attention, the singular form of its pollen-grains: these are comparatively large and readily distinguished under a common lens, each granule consisting of four agglutinated spherical globules similar in form to the simple pollen-grains of most *Solanaceæ* and *Scrophulariaceæ*: three of these globules are on the same plane, the other being superimposed in the centre, thus forming a sort of rounded tetrahedron, and they adhere so completely that they cannot be sepa-

rated without bursting. The fact is noticed by Mr. Hassall in his memoir "On the Structure of Pollen" (Ann. Nat. Hist. viii. 100), who states that so curious a circumstance is not singular, as it occurs in *Oxyanthus* in *Cinchonaceæ*, *Leschenaultia* in *Goodeaniaceæ*, and in some species only of *Epilobium* in *Onagraceæ*: the same is also observable in all the genera of the *Epacrideæ* and of *Ericaceæ*, with the exception of *Clethra*, where they are simple. From these analogous facts it is evident that this compound structure of the pollen-grains is not of sufficient importance to affect in any way the ordinal position of *Salpiglossis*.

Mr. Bentham mentions only a single species of this genus, as he considers all our garden kinds as mere varieties of *S. sinuata*. On this head I may remark, that I found in Chile, plants which I always considered to be two very distinct species, viz. *S. sinuata* (my *S. glutinosa*) and my *S. purpurea* (Trav. ii. p. 531); but I have little doubt that *S. picta*, *S. Barclayana*, *S. fulva*, *S. intermedia*, &c. are all hybrid productions from these two species. I always met with *S. sinuata* growing near the coast, its corolla being constantly of a yellowish white, with brownish stripes; on the contrary, I invariably found *S. purpurea* at a much greater elevation near the foot of the main Cordillera, or within its gorges, its flowers being always of a dark lilac, with deep purple lines, and never of the yellowish hue so conspicuous in *S. sinuata*. I cannot however refer to my original specimens, as they were unfortunately lost off Cape Horn with my general Chile collections; but the coloured drawings of both species made in 1820, and which I have preserved, serve to impress these facts strongly on my memory. From the several dried specimens of *Salpiglossis* in Sir William Hooker's herbarium collected by Gillies, Cuming and Bridges, we may detect at a glance the two different species. The following I consider as the amended diagnosis of this genus:—

SALPIGLOSSIS, R. & P. (char. emend.).—*Calyx* tubulosus, 10-nervis, 5-dentatus, dentibus subæqualibus, attenuatis, obtusiusculis. *Corolla* infundibuliformis, tubo imo cylindraceo, superne campanulata, compressa, limbo 5-lobo, obliquo, subbilabiato, lobis profunde emarginatis, superiore majore, erectiore, æstivatione reciprocativa*. *Stamina* 5, inclusa, quorum 4 didynama, quinto breviori, sterili; *filamenta* subulata, e constrictione tubi orta; *antheræ* ovatae, 2-lobae, basi cordatae, subversatiles, lobis adnatis, rima marginali dehiscentibus; *pollen* compositum, e granulis 4 aggregatis, quorum 1 superpositum. *Ovarium* conicum, disco carnosio sub-2-lobo impositum, 2-loculare; *placentæ* centrales, dissepimento utrinque adnatæ, multi-

* Ann. Nat. Hist. 2nd Ser. vol. iii. p. 172.

ovulatae. *Stylus* exsertus, apice compressus, incrassatus, subincurvus. *Stigma* majusculum, transverse dilatatum, semilunare, bilabiato-emarginatum. *Capsula* oblonga, calyce persistente tecta, 2-locularis, septicido-2-valvis, valvis chartaceo-coriaceis, 2-fidis, placenta centrali demum solutis. *Semina* plurima, minuta, subangulata, hilo laterali; testa striato-rugosa. *Embryo* intra *albumen* carnosum spiraliter curvatus, teres, *radicula* arcuata, ad angulum basalem spectante, *cotyledonibus* 4-plo longiore.—Herbæ *Chilenses glanduloso-pubescentes*; folia *alterna, lanceolata, inferioribus sinuato-laciniatis, petiolatis, superioribus linearibus, sessilibus, sinuatis, floriferis linearibus, subbracteiformibus*. Inflorescentia *paniculata*, floribus *pedicellatis, pedicellis extra-axillaribus*; corolla *straminea vel purpurea, lineis anastomosantibus picta*.

1. *Salpiglossis sinuata*, R. & P. Syst. Veg. 163; Prodr. tab. 19. *S. glutinosa*, Miers, Trav. ii. 531. *S. straminea*, Hook. Exot. Fl. p. 229. *S. picta*, Sweet, Br. Fl. Gard. tab. 258; Hook. Bot. Mag. tab. 3365;—omnino viscoso-pubescent, foliis inferioribus laxis, lanceolatis, acute pinnatifido-incisis, superioribus breviter petiolatis, inciso-dentatis, laciniis acutis, floralibus sessilibus, linearibus, integris, bracteiformibus; corolla lineis violaceis picta, tubo lutescente, limbo stramineo.—Chile, ora littorali, in herb. Hook. (Gillies, Mathews, Cuming, Bridges).

This plant, well known in our gardens, grows to the height of 2 or 3 feet. Its leaves are of more delicate texture, always longer, narrower, and more deeply incised into acute segments than in the following species: they are 5 inches long, including the petiole, on which they are decurrent, and $1\frac{1}{4}$ inch broad, or 7 lines across at the base of the incisures. I observe a note upon my drawings, stating that in this species, the two lower stamens, between which the sterile one is situated, form the longest pair, while in *S. purpurea* the same stamens form the shorter pair, and I have found this in the dried specimens I have examined, but I cannot at this distance of time assert it to be a fact of constant occurrence.

2. *Salpiglossis purpurea*, Miers, Trav. ii. p. 531;—viscoso-pubescent, foliis radicalibus confertis, elliptico-oblongis, apice obtusiusculis, imo in petiolum elongatum cuneatis, margine grosse et obtuse dentatis, crassis, caulinis integrioribus, lanceolatis, obtusis, petiolo abbreviato, floralibus linearibus, sessilibus, bracteiformibus; corolla tubo purpureo, limbo violaceo, reticulatim picta.—In Andibus Chilensibus, v. s. in herb. Hook., Gillies (S. andicola, MSS.).

Var. *β. atropurpurea*, Graham. Corolla reticulatim nigro-picta, limbo profunde purpureo. Cuming.

This plant seldom exceeds a height of 15 or 18 inches : it has a stronger and more woody stem, and may easily be distinguished from the former species by its radical leaves, which are of thicker texture, broader in proportion, shorter and more elliptic, with short obtuse teeth, and not deeply divided with acute incisures, as in *S. picta*: the radical leaves, including the attenuated petiole, are $3\frac{1}{4}$ inches in length, the limb being $2\frac{1}{2}$ inches long and 11 lines broad.

PTEROGLOSSIS.

Among the very curious and interesting plants collected by Bridges in the vicinity of Coquimbo, is one that will constitute a new genus, near *Salpiglossis*. It is a plant with pinnatifid leaves, only in a few of the lower axils, those above being reduced to a linear form; its ascending stems are widely diffuse in many spreading dichotomous branchlets, which are very slender and terete; the leaves at each axil are gradually diminished to the size of very short linear bracts, which support a few solitary one-flowered peduncles. The corolla, though smaller, has much the shape of that of *Salpiglossis*, with didynamous included stamens, and it possesses the peculiar æstivation of the *Salpiglossideæ*. The most remarkable feature consists in the unusually broad expansion of its stigma, which hoods the lower pair of stamens, somewhat after the manner of *Nierembergia*, its winged appendages being quite membranaceous, decurrent for some length upon the style, and marked with numerous parallel radiating nervûres, which terminate in its lacerated or crenulate margins. The name above proposed is derived from *πτέρων*, *ala*, and *γλῶσσα*, *lingua*, because of its broadly winged stigma.

PTEROGLOSSIS (gen. nov.).—*Calyx* tubulosus, subcylindricus, breviter 5-dentatus, 10-nervis, dentibus acutis. *Corolla* infundibuliformis, tubo imo coarctato, hinc ventricosus, 15-striatus, limbo expanso, inæqualiter 5-lobus, sub-bilabiatus, lobis omnibus emarginatis, superiori longiori et latiori, æstivatione reciprocativa*. *Stamina* 4, didynama, inclusa, postica longiora; *filamenta* dilatata, apice angustata. *Antheræ* ovatae, 2-lobae, imo divaricatae, apice sine connectivo in sinu apicifixae, rima marginali dehiscentes. *Ovarium* disco carnosus sub 2-lobo impositus, stipitatus, 2-locularis, placentis centralibus dissepimento adnatis, multiovulatis. *Stylus* apice dilatatus, inflexus. *Stigma* bialatum, emarginatum, superne carinatum, infra planum, glandula viscoso in sinu notatum, alis latis, membranaceis, in stylum longe decurrentibus, radiatim nervosis, margine sublaceratis, staminibus inferioribus amplecten-

* Ann. Nat. Hist. 2nd Ser. iii. p. 172.

tibus. *Capsula* calyce persistente tecta, 2-locularis, 2-valvis, valvis semibifidis, placenta centrali demum solutis. *Semina* ignota.—*Planta Chilensis subglabra*, radice *lignosa perenni*, caulibus *plurimis adscendentibus, gracilibus, laxis, divaricatis ramosis*; folia *alterna, inferioribus sinuato-pinnatifidis*; pedunculi *uniflori, axillares, paniculam laxam efformantes*.

1. *Pteroglossis laxa*;—subglabra, ramosissima, ramis plurimis, teretibus, gracilibus, laxe divaricatis, nodis distantibus; foliis axillaribus, inferioribus oblongis, sinuato-pinnatifidis, in petiolum spatulatis, sub lente minutissime pubescentibus, mediis linearibus, supremis floriferis in bracteis parvis decrescentibus: pedunculis solitariis, viscoso-pubescentibus, unifloris; floribus parvulis; corolla straminea, lineis violaceis picta.—Coquimbo, in herb. Hook. (*Bridges, no. 1839*).

This plant has very much the habit of *Schwenkia americana*: the root is ligneous, as well as a short perennial woody stump, from which arise several somewhat erect branches 12 to 18 inches long, which are evidently deciduous; these are slender, terete, glabrous, flexuately brachiate at each axil, and again dichotomously branched: below, the axils are more approximate, above widely distant. The lower leaves are sinuato-pinnatifid, about 1 to $1\frac{1}{4}$ inch long including the petiole, and 3 lines broad including the segments; to the naked eye they appear quite smooth, but under the lens they are seen to be invested by numerous, very short, minute hairs: these leaves gradually diminish to the size of $\frac{3}{4}$ to 1 inch long and only half a line broad, and as they ascend they become smaller, till they arrive at the terminal floriferous branchlets, where they assume the form of linear bracts, scarcely a line in length and $\frac{1}{8}$ th of a line broad; from each of these springs a very slender glandular pubescent peduncle, about half an inch in length, bearing a solitary flower; the calyx is $1\frac{1}{2}$ line long, tubular, and crowned by five equal fleshy erect teeth; the corolla is about 4 lines long, of a yellowish colour, marked by about fifteen violet-coloured, parallel, branching lines; the tube is contracted and cylindrical below for one-third of its length, above this it is ventricose, with a border of five, oblong, rounded and emarginate patent lobes, the upper one of which is somewhat longer and broader; they assume in æstivation that peculiar mode of plication which I have called reciprocative (*loc. cit.* 172); the didynamous stamens are included, arising from the contracted portion of the tube; the ovarium is oblong, 2-grooved, imbedded in a fleshy 2-lobed cup borne upon a short stipitate support, and surrounded by the indurial remains of the corolla; the style is slender, the length of the stamens, inflexed at its apex, and gradually widening consi-

derably by the broad decurrent wings of the stigma, which hood the anthers of the somewhat shorter pair of stamens: the stigma is broad, membranaceous, deeply emarginate at its apex, constituting two distinct rounded wings, marked by numerous radiating nervures; it forms altogether a galeate head, flattened on the under side and keeled on the upper surface by the prominent sharp margin of the style, which carinated edge is terminated in the sinus by a viscous globular gland. The capsule is small, consisting of two bifid valves, parallel to the dissepiment, and inclosed by the persistent calyx. I had no opportunity of examining its seeds*.

LEPTOGLOSSIS.

This genus was founded by Mr. Benthams, in the 'Botany' of the Voyage of the Sulphur, for a Peruvian plant, which has not yet been figured, nor have the details of its structure been hitherto delineated or minutely examined. It possesses much the habit of a *Browallia*, to which it offers some resemblance in the form of its corolla; but it differs from that genus in having a fifth sterile stamen and in the shape of its stigma, which is intermediate between that of *Pteroglossis* and of *Salpiglossis* or *Nierembergia*. No opportunity had presented itself for examining the æstivation of the corolla of *Leptoglossis* when I offered the remarks upon the tribe of the *Salpiglossideæ* (Ann. Nat. Hist. 2nd Ser. iii. 173); but recent observation has enabled me to state that it is decidedly imbricative, and as far as can be judged from well-macerated dried specimens, it is apparently of that modification which I have called replicative (*loc. cit.* 173), the postical lobe being altogether interior, as in *Nierembergia* and *Petunia*. The alliance of *Leptoglossis* is clearly with the two latter genera, agreeing with the former in its small lanceolate leaves, its calyx, its slender tubular corolla, in the dilatation of its stigma, in the long stipitate support of the ovarium, in its persistent hypogynous glands, and in its stipitate capsule. With the latter genus it agrees in the obliquity of the border of its corolla, and the somewhat palate-like enlargement of the tube below the throat. The position of *Leptoglossis* is manifestly among the *Petunieæ*, and not in the *Salpiglossideæ*, as suggested in the tabular arrangement (*loc. cit.* p. 165). It appears to me to hold no relation whatever to *Schwenkia*.

The following generic character has been made, after a careful analysis of the plant referred to:—

LEPTOGLOSSIS, Bth. non D.C. Char. emend.—*Calyx* brevis, tubulosus, nervis 15 in seriebus 5 ternariis pressius ordinatis,

* This plant, with its analytical details, will be shown in plate 52 of the 'Illustr. South Amer. Plants.'

interstitiis eveniis membranaceis, 5-anguloso-sulcatus, 5-dentatus, dentibus acutis linearibus callo-mucronatis. *Corolla* tubularis, elongatus, tubo imo carnosulo 5-sulcato constricta, medio subcylindrica, in faucem antice breviter ventricosa, limbo obliquo, 5-lobo, lobis suborbicularibus, 2 anticis minoribus reflexis, postico erectiuseculo, æstivatione imbricata, verisimiliter replicativa. *Stamina* 5, inæqualia, inclusa, quorum 4 didynama, cum quinto sterili; *filamenta* subdilatata, tenuissima, posticorum e coarctatione tubi orta, anticorum dimidio breviora medio corollæ inserta, sterili sub-breviore intermedio; *antheræ* in faucem conniventes, stigmatē deflexo circumplexæ, 2-lobæ, in sinu apicifixæ, lobis basi divaricatis, apice sine connectivo connatis, et rima marginali bivalvatim transverse hiantibus; posticorum dimidio minore; sterili oblonga, cassa, erecta. *Pollen* simplex, globosum, 3-sulcatum. *Ovarium* oblongum, conicum, longiuscule stipitatum, glandulis 5, carnosius, coloratis, subliberis, rotundatis, summo stipitis connatis, et discum hypogynum cupuliformem persistentem fingentibus, 2-loculare, placentis centralibus, multiovulatis, dissepimento utrinque adnatis. *Stylus* tenuis, inclusus, apice incurvatus, compressus, valde dilatatus. *Stigma* emarginato-2-labiatum, lobis latis-simis, brevibus, truncatis, intus incrassatis et viscoso-glandulosis, inferne longe auriculatis et membranaceis, antheras amplectentibus. *Capsula* calyce persistente tecta, 2-locularis, septicide 2-valvis, valvis semibifidis, placenta centrali demum solutis. *Semina* plurima, parva, reticulato-favosa; cetera ignota.—Herba *Peruviana viscoso-pubescentis*; folia *alterna, parva, sessilia, lanceolata, integra*; cymæ *plurimæ, alternæ, terminales, ex axillis foliorum superiorum lateraliter ortæ, longe et patentim pedunculatæ*; flores *parvuli, pedicellati, conferti*; corolla *albida*.

1. *Leptoglossis Schwenkioides*, Bth. Voy. Sulph. 143;—undique viscoso-pubescentis; foliis lineari-lanceolatis, acutis, 1-nerviis, apice callosis, sessilibus, in turionibus sæpe fasciculatis, superioribus decrescentibus; corolla tenui, glabra, intus imo retrorsim pilosa.—Peruvia, v. s. in herb. Hook. (Huamantango, Barclay; Peru, Mathews, no. 1011; Cuming, no. 1010).

This plant has very much the habit of some of the small-leaved species of *Petunia*; its branches are virgate, the leaves 6 to 9 lines long, 1 to $1\frac{1}{2}$ line broad; the floral branchlets are about 1 inch long, generally with three to five flowers at the extremity of each; the pedicels are very short; the calyx 2 lines in flower, 3 lines in fruit; the tube of the corolla is 8–9 lines in length, 1 line broad, the border 3–4 lines in diameter; the capsule is 2 lines long*.

* A figure of this species, with sectional details, will be given in plate 53 of the 'Illustr. South Amer. Plants.'